

ON THE MAKING OF GELATIN CASTS.

BY

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In undertaking the preparation of a series of the various breeds of domestic fowls for the U. S. National Museum, it was necessary at the outset to solve the problem of replacing the natural combs by artificial ones since the natural combs when dried are so much distorted from shrinkage as to seriously detract from the appearance of the mounted specimens.

Since no modeling, however skillful, can give the exact appearance and pattern of the papillæ with which the comb of a fowl is covered, it seemed desirable that the artificial comb should be cast in a mold made from the natural one. For the cast itself some durable material was needed that could be readily worked and easily colored, and was capable of resisting changes of temperature.

While wax possesses the first two qualifications, and is, from its translucent character, very effective for combs and wattles, yet cold renders it brittle and the heat of a Washington summer causes it to soften and lose shape. It is, therefore, unsuitable for the purpose.

Preparations with glue (or gelatin) for their basis having been used successfully for anatomical models, cast of fishes, etc., it seemed probable that this substance could be employed with advantage for artificial combs. After considerable experimenting the following combination was found to give good results:

	Ounces.
Best Irish glue.....	4
Gelatin*.....	2
Glycerin.....	4
Boiled linseed oil.....	½

The glue and gelatin should be softened in 60 per cent alcohol, only enough being used to barely cover them. The object of this is to introduce as little water as possible into the compound.†

The glue should then be melted and the glycerin stirred into it, together with a few drops of carbolic acid or oil of cloves.

Casts made of the above material have lain exposed to the sun for

*A strong gelatin such as is used by photographers is best.

†Other methods may be followed, however, such as wetting the glue and wrapping it in a moist cloth.

an entire summer and been kept in a warm, dry room for the rest of the year without shrinkage or other change of form.

Owing to the small proportion of water, this compound is so dense and dries so rapidly that it is with difficulty poured into a mold, and in making casts of combs it is best to warm the mold, fill each half with the melted mixture, and press the halves firmly together.

The comb of a fowl is, of course, cut off before being molded. The artificial comb is attached by applying a coat of the gelatin compound to the cranium, warming the base of the comb with a hot modeling tool, and immediately pressing the comb in place.

Mold marks and other imperfections are to be removed by trimming with sharp seissors and running over the places with a warm iron modeling tool, but some little practice is needed in order to do this well.

By slight modifications in the proportions of glue and water and by varying the method of manipulation, casts may be made of a great variety of objects, and the compound is, of course, equally available for gelatin molds.

It must be borne in mind that the addition of more water, while increasing the fluidity of the melted mass, also increases the amount of shrinkage of the cast, since, sooner or later, the water must dry out; still, in most instances, a small amount of shrinkage is of little consequence.

Another method of making a cast is to fill the mold with small pieces of the compound which have been melted and dried, place the mold in a steam oven with a vessel containing a little water, and subject it to a continuous heat. The moisture produced by the evaporating water furthers the melting of the glue, and can be driven off by exposure to dry heat. The objection to this method is the rapid deterioration of a plaster mold under long continued heating, but where only one cast or a few are to be made this is of no consequence.

While this is the best method of heating a mold and keeping it warm, it can be done successfully by using a deep, open pan containing 2 or 3 inches of sand.

In making large casts, or even those of moderate size, a wooden block or core may be used not only as a matter of economy, but to permit the more rapid drying of the mass, to lessen the chance of shrinkage, and to give a firm base for the attachment of supports. Thin casts, like the wattles of a fowl, may be strengthened with wire cloth or with bolting cloth.

A ground color may be given to gelatin casts by the use of dry or tube colors, but in either case the coloring matter should be thoroughly mixed with the glycerin before this is added to the melted glue.

Molds should be shellacked and oiled before using, as in making plaster casts, and it may be said that an oatmeal pot of the glazed ironware, known as "graniteware," makes an excellent gluepot.